DISCUSSION.

DR. THEOBALD.—Quite recently I had a very severe case of this character in the person of my assistant in the hospital. He is a physician aged about thirty-five, and was run down from over work. He first complained of pain about the eye, and there was observed slight chemosis of the conjunctiva and perhaps a little prominence of the eye-ball. This went on increasing, and four or five days later, deep fluctuation was found over the ball, to the inner side. It would have been almost impossible to make the opening under the upper lid, for the ball was prominent and the lids were tense. It seemed, therefore, better to make the incision through the upper lid. A deep incision was made and there was a free flow of creamy pus. Poultices were then applied. The discharge continued and the eye began to recede. Two days after the opening had been made, fluctuation made its appearance below. This point was opened. After this he made a rapid recovery. The interesting point about this case is, that although there was very decided exophthalmos and disturbance of vision, the protrusion entirely disappeared and vision was perfectly restored. There were no changes discoverable in the fundus.

EXPERIENCES IN REFRACTIVE CASES.

BY W. W. SEELY, M.D.,
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FROM my own experience, I am satisfied that while practice based on ophthalmoscopic examination and test-glass trials answers in a large number of cases, it does not answer in an equal, if not still larger number.

Assuming that it is possible to determine the refractive state ophthalmoscopically, perhaps a violent assumption, practice based on such determination would fail utterly in many cases, and would only succeed in others after tedious renewals of glasses. Hence, determining the refraction by the ophthalmoscope, and acting on it, as a matter of routine practice, I am persuaded is the foundation for rendering our successes and failures about equal.

I am not discussing the determination of the refraction, except in its relation to practice; and it is from this position that I will speak of a few special points.

The intimate relation existing between strain on the eye and diseases of this organ is not only a new question, but one of constantly increasing importance, and it, in connection with that of refractive troubles, *per se*, is filling the consultation rooms of oculists with the most complicated and perplexing cases that present themselves. As the general profession becomes better able to manage ordinary diseases of the eye, they likewise become better able to discriminate between what is on the surface and what lies deeper, and so no longer slur over cases for weeks and months with collyria and pomades because they present marginal lid troubles or conjunctivitis, or interdict the use of the eyes because fatigue is felt.

A small amount of myopic astigmatism with blepharitis or without, with asthenopic symptoms or without.—Under this heading I have to say, that for a working basis, I regard it wise to call in question a small amount of myopia, especially of myopic astigmatism, and immediately test whether it is real or assumed, by paralyzing the accommodation.

(I will state here that I have only taken a few representative cases readily found under the first few letters of my case-book, so as not to be tedious.)

In October, 1883, Mr. C., a young man of twenty, complained of fatigue on use of the eyes. Examination seemed to show V. $= \frac{20}{20}$ — (minus), vertical lines seen best, and only corrected with $+ 0.5_c$ ax. 90° R. E. L. E. apparently horiz. lines best, and V. $= \frac{20}{20}$ —, correction only made with $+ 0.5_c$ ax. 90°. He showed me a pair of glasses which had been prescribed by a gentleman in an eastern city, of $- 0.5_c$ ax. 90°. I remarked to him that they could not be correct, that he probably needed a plus cylindrical ax. horiz.; when he replied, "I have a pair of plus cylindrical given me by another gentleman in the same city, but I can't wear them." These I found to be $- 0.5_c$ ax. 10°.

On paralyzing the A. I found: L. E. V. $= \frac{20}{70}$ and full correction $+ 1._{25} \bigcirc + 0.5_c$ ax. horiz. R. E. V. $= \frac{20}{70}$ and full cor-

rection $+0.75_s \bigcirc +0.5_c$ ax. horiz. $+0.5 \bigcirc +0.5_c$ ax. horiz. each eye gave him perfect relief.

Mixed Astigmatism.—Mixed astigmatism is recognized by all as being comparatively of infrequent occurrence; but I am persuaded from my own experience it is even more infrequent than we have been willing to admit. It may seem startling that I have never seen a single case where it was a fixed condition.

S. D., aged fourteen, came to see me in 1882. Examination revealed the following: L. E. -2.5_c ax. horiz. and $+1.5_c$ ax. 90°. R. E. $-3._c$ ax. horiz. and $+0.75_c$ ax. 90°. After several applications of duboisia, the following was revealed: L. E. $+2.75_c$ to $+3._c$ ax. 90°. R. E. $+2.5_c$ ax. 90°. This correction remains perfect.

F. R. C., aged eleven, came in October, 1883. V. = $\frac{20}{70}$ each eye without glasses. He was a sharp witted boy; but the most perfect correction I could get out of the case was emphatically salmagundian, $-3._c$ ax. 10° and $+1._c$ ax. at right angles, with V. = $\frac{20}{30}$ —. Under a few applications of duboisia, V. = $\frac{20}{30}$ + and lines alike, with $+3._c$ ax. 90°. The glasses gave perfect comfort, and now V. = $\frac{20}{20}$ —.

The following was apparently a case of simple hypermetropic astigmatism in one eye, and mixed in the other:

L. B., aged thirty. June, 1883. L. E. V. $\frac{20}{20}$ — and vert. lines best. Perfect correction with $+0.5_c$ ax. 10°, though accepted more readily $+0.75_c$ ax. 10°. This eye under paralysis showed full correction to be $+1.5_s \bigcirc +0.5_c$ ax. horiz. R. E. V. = $\frac{20}{70}$, and only increased to $\frac{20}{30}$ with $1._c$ ax. 175° combined with $+1._c$ ax. at right angle. Under paralysis this eye proved to be precisely the same as the left, i. e. $+1.5_s \bigcirc +0.5_c$ ax. horiz. When seen February, 1884, the glasses given ($+1._s \bigcirc +0.5_c$ ax. horiz.) had been worn with perfect satisfaction.

Influence of lack of muscle balance on the refraction.—Under this head I wish to give a few cases illustrative of the apparent causative relation existing, at least in certain cases, between insufficiency of the internal recti and spasmodic myopia.

Miss H., aged twenty-five. January, 1882. V. = $\frac{20}{70}$ about in each eye, and best correction made with $0.5_s \bigcirc 0.5_c$ ax.

horiz., but V. could only be made $\frac{20}{30}$. After three days of duboisia V. = $\frac{20}{20}$ each eye.

This case was allowed to go without assistance, though a record of lack of muscle balance was made, as well as the prediction that the myopia would return. In September, 1882, a re-examination showed almost precisely the same state of things as on first examination. I then insisted on putting on prisms, and gave 1° each eye, bases internal. The case was not seen again till early in 1884, when V. = $\frac{20}{20}$ each eye, and prisms still worn with comfort.

Miss D., aged 20. December, 1883. L. E. V. = $\frac{20}{40}$ —, and $\frac{20}{20}$ with -1.5_s. R. E. V. = $\frac{20}{40}$ —, and $\frac{20}{20}$ with -1.5_s.

This patient used at home for ten days a four gr. solution of atropine, and, on her return, L. E. V. = $\frac{20}{70}$, and $\frac{20}{20}$ with $+ 1._s$. R. E. V. = $\frac{20}{70}$, and $\frac{20}{20}$ with $+ 1.25_s$.

Record [1] on first examination of insufficiency, for distance ext. recti = 12°, and int. recti = 8°. $+ 1._s$ was now ordered for all purposes, but as soon as the paralysis passed off the spasmodic myopia returned.

Atropia was used for ten days again, her father being a physician, and the eyes tested under paralysis by myself. V. = $\frac{20}{200}$ each eye, and corrected to $\frac{20}{20}$ with $+ 1.5_s$. Same glasses continued. This course was persisted in for several months, till I finally ordered $+ 1._s$ combined with 1° prisms bases internal.

The patient had a slight return of the spasm by the time she got the glasses, but the atropine was used, and the eyes allowed to recover under the glasses, which have been worn since with the greatest comfort, and no return of the spasm as an examination in early part of June of this year showed.

T. K., aged sixteen. April, 1883. L. E. V. = $\frac{20}{200}$, and $\frac{20}{20}$ with -1.5_s. V. = $\frac{20}{50}$, and $\frac{20}{20}$ with -0.5_s. Slight blepharitis, and considerable fatigue. Both ext. and int. recti = 10° in the distance, but single vision (Græfe test). Under duboisia once, V. = $\frac{20}{28}$ R. E. and $\frac{20}{50}$ L. E.

[1] For routine practice in the distance (20 ft.) I use a small jet of gas, below level of patient's head, observing what degree prism can be overcome with base external and internal. Line and dot for near test.

It required eight days to make V. = $\frac{20}{20}$ with L. E. The right only required a repetition of duboisia once or twice, and V. remained $\frac{20}{20}$, but for months, as soon as the mydriatic would pass off, spasmodic M. returned in L. E. I used atrop. for six weeks or two months, continuously, and still on recovery spasm would return.

In October, 1883, V. = $\frac{20}{70}$ in L. E. I now ordered plain prisms 1°, bases internal, and V. at no time since the glasses has been less than $\frac{20}{30}$, and of late has constantly been $\frac{20}{20}$, and the blepharitis has entirely disappeared and the eyes are used with perfect comfort.

S. E., aged sixteen. June, 1883. L. E. V. = $\frac{20}{70}$, and $\frac{20}{20}$ with $-1._8$. R. E. V. = $\frac{20}{50}$, and $\frac{20}{20}$ with -0.5_8. Muscles = 8° in the distance, but easier with ext. than int. recti. Single V. near. I regarded the case as one of spasmodic myopia, and put the eyes under duboisia till V. = $\frac{20}{20}$.

In December, when patient was seen again, V. = $\frac{20}{50}$ L. E. and $\frac{20}{40}$ R. E. Slight blepharitis, but little or no complaint of fatigue. V. was now made $\frac{20}{20}$, and prisms 1° bases internal given.

June 2d, 1884. V. = $\frac{20}{20}$, glasses having been worn constantly.

In conclusion I have to say that my results, since insisting upon, first, a complete knowledge of the refractive state, and second, putting the eyes totally at rest for a few days by paralysis, have been infinitely more satisfactory than in former years. I am thoroughly persuaded further that no case of myopia should be given glasses, except under complete paralysis and a test of the muscle balance.

DISCUSSION.

DR. MITTENDORF.—My experience in regard to mixed astigmatism is not quite like that of Dr. Seely. I remember one case, in which a gentleman had been given a — 24 s., but this did not give good vision. I examined him carefully, and found that he required a — 10 D. c., combined with + .75 c. With this the vision was $\frac{20}{30}$, before it was $\frac{20}{0}$.

In regard to giving glasses for asthenopic trouble, I have

found that prisms are often required, not only with the base in or out, but also either upwards or downwards, as the case may be. This is not done to produce monocular vision, for if the prism is too strong the patient complains of the disturbance. I give a prism of one or two or more degrees, according to the difference in the height of the two eyes. In order to relieve asthenopic symptoms, the muscles should be exercised. Not only by Dyer's method, but also by exercising the muscles of the whole body. In many cases of severe asthenopia, the greatest relief has been obtained by having the patient take boxing lessons. Even in young ladies I have had good results with this method.

CASES OF DISEASE OF THE FRONTAL SINUS.

By CHARLES J. KIPP, M.D.,
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Case I.—Abscess of Frontal Sinus, Ethmoidal Cells and Sphenoidal Sinus.

John Bredfelt, fifty-four years of age, in good health, consulted me in March, 1883, with regard to double vision and pain in the head. He had suffered for many years from frontal headache, but had otherwise always enjoyed good health. A year ago he first noticed the diplopia, and since then a gradual protrusion of the eye has taken place.

I found that the left eye was pushed downward, outward and slightly forward, the cornea of this eye standing about 1 cm. below that of the other eye. The mobility of the eye was decidedly impaired upward and inward. The eyelids were normal, except that the upper was rather fuller than that of the opposite side. Palpation discovered a nodular tumor of irregular form which was adherent to the upper half of the inner and nearly the whole of the upper margin of the orbit. It projected about 1.5 cm. towards the eye, and extended backward in the orbit as far as the finger could reach. It felt hard and unyielding to the finger. No fluctuation could be discovered. No pulsation of the tumor could be detected.